

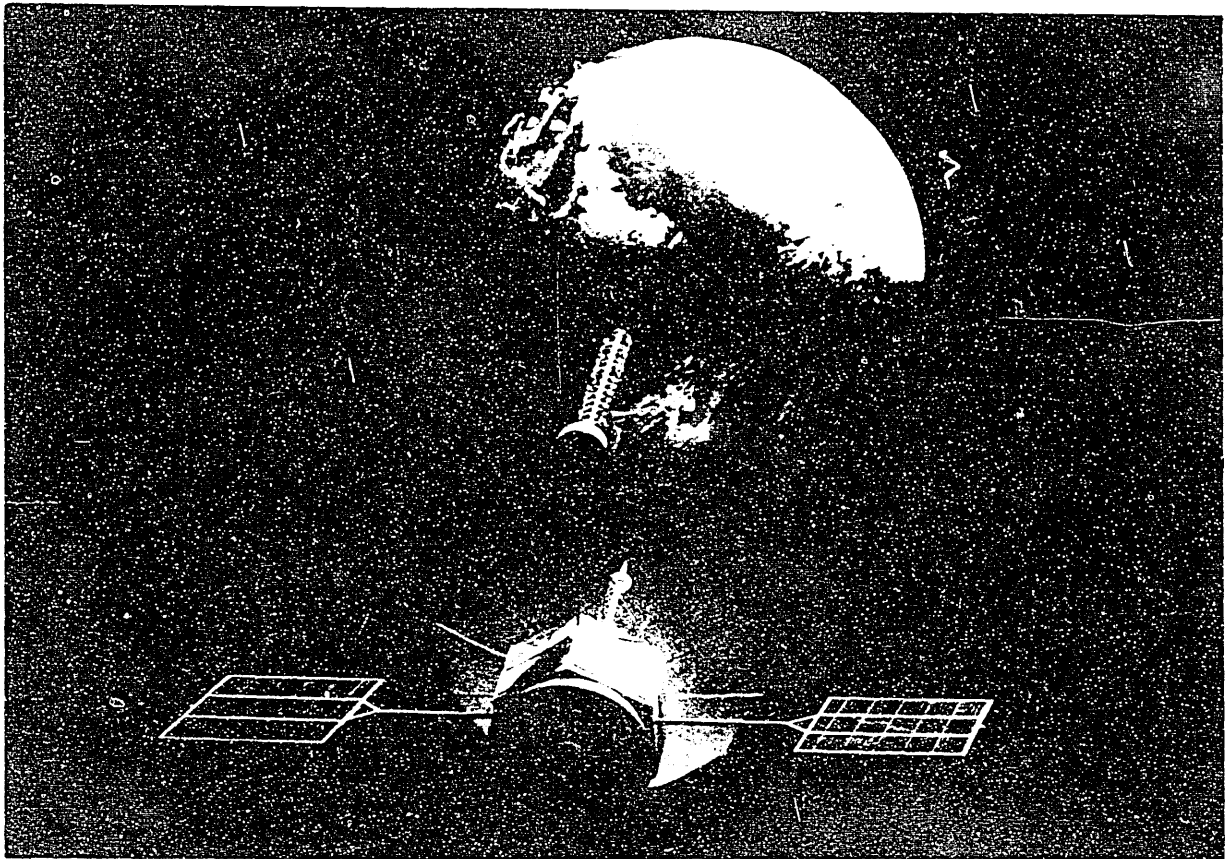


Fact Sheet

United States Air Force

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FLEET SATELLITE COMMUNICATIONS [FLTSATCOM]



(USAF Photo 114872) *

Department of Defense Fleet Satellite Communications Systems (FLSATCOM) spacecraft employs an apogee kick motor which boosts the satellite to its final geosynchronous orbit, approximately 22,250 miles (35,600 km) above the earth. TRW Defense and Space Systems Group developed this satellite under the Air Force's Space Division (SD) and the Navy's Electronic Systems Command. With the launch of the fourth satellite on October 30, 1980, the orbital configuration is now complete. The first satellite has been operating successfully since its launch on February 9, 1978.

The Fleet Satellite Communications (FLTSATCOM) system provides a near global satellite communications system for high priority communications requirements of the Navy and the Air Force. It also supports other Department of Defense needs. The Naval Electronics Systems Command has overall program management responsibility. The Program office at Space Division (SD) manages acquisition of the space segment of the program.

The space segment consists of four satellites in geosynchronous equatorial orbit. Each FLTSATCOM spacecraft is launched from Cape Canaveral aboard an Atlas-Centaur space booster provided by the National Aeronautics and Space Administration (NASA) under contract to SD. After the Atlas-Centaur places each vehicle in an elliptical orbit, and after booster separation, it is lofted into geosynchronous orbit by an onboard solid-fuel apogee kick motor. Solar panels are then deployed and the sun and earth are tracked by special sensors.

The satellite's hexagonal body is 8 ft. (2.5 m) in diameter and 50 in. (1.2 m) high. The main parabolic transmit antenna is 16 ft (5 m) in diameter with an 80 in. (2 m) solid center surrounded by wire mesh screen that is folded inside the Atlas-Centaur payload fairing. Once in orbit, the screen is deployed by ground command. A 13.5 ft. (4.1 m) stepped helical receive antenna, 13 in. (33 cm) in diameter at the base, is mounted outside the edge of the antenna dish. The receive antenna is also folded within the Centaur fairing and deployed by separate ground commands.

Primary electrical power for the spacecraft is provided by two deployable solar array paddles, which will supply approximately 1,256 watts of power at end of life. In addition, three nickel-cadmium batteries — each having 24 sealed 24 amp hour cells — provide power during eclipse operations. The satellites have a design life of five years.

Each satellite has 23 communication channels in the ultra-high and super-high frequency bands. Ten of the channels are used exclusively by the Navy for communications among its land, sea, and air forces — world wide. Twelve other channels are used by the Air Force as part of its AFSATCOM (Air Force Satellite Communications) system for command and control of nuclear capable forces. A 500 kHz channel on the satellite is allotted to the National Command Authorities.

The ground segment of the FLTSATCOM system will consist of communications links among designated and mobile users, including most U.S. Navy ships and selected Air Force and Navy aircraft, as well as global ground stations. These terminals will be managed, developed, and acquired by the individual users.

WEIGHT: The satellite and its apogee kick motor with propellants weigh about 4,100 lbs. (1,860 kg) going into transfer orbit.

STABILIZATION: A body-fixed momentum wheel interacts with monopropellant hydrazine thrusters to provide three axis attitude stabilization and point the satellite's antennas at earth's center while the satellites's solar arrays track the sun line. Hydrazine jets allow changing satellite locations in orbit.

CONTRACTORS: TRW Space and Defense Systems Group, Redondo Beach, CA, is designing, developing, and testing the satellites.

Aerospace Corporation, El Segundo, CA, is providing general systems engineering and technical direction under contract to SD.

PROGRAM STATUS: The first satellite was successfully launched and placed in orbit February 9, 1978. Satellites two, three, and four were placed in orbit on May 4, 1979, January 17, 1980, and October 30, 1980, respectively. This completes the four satellite space segment configuration. A fifth satellite, to be delivered in June 1981, will be held as a spare, either in orbit or in ground storage, until failure of one of the on-orbit satellites.

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